

## PATENT COOPERATION TREATY

PCT

10 MAY 2004

From the INTERNATIONAL SEARCHING AUTHORITY

To:  
**SENSA**  
 Attn. Stoole, Brian David  
 Gamma House  
 Chilworth Science Park  
 Southampton SO16 7NS  
 UNITED KINGDOM

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing  
(day/month/year)

11.05.2004

Applicant's or agent's file reference <b>101.0083</b>	<b>FOR FURTHER ACTION</b> See paragraphs 1 and 4 below
International application No. <b>PCT/GB 03/03785</b>	International filing date (day/month/year) <b>29/08/2003</b>
Applicant <b>SENSOR HIGHWAY LIMITED</b>	

1.  The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

**Filing of amendments and statement under Article 19:**

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

**Where?** Directly to the International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland  
 Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2.  The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3.  **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority  
 European Patent Office, P.B. 5818 Patentaan 2  
 NL-2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Pieter Nijhuijs

## NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

### INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

#### What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

#### When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

#### Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

#### How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

#### What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

## NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:  
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:  
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:  
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or  
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:  
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

### "Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

### Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

### Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>101.0083</b>	<b>FOR FURTHER ACTION</b>	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. <b>PCT/GB 03/03785</b>	International filing date ( <i>day/month/year</i> ) <b>29/08/2003</b>	(Earliest) Priority Date ( <i>day/month/year</i> ) <b>30/08/2002</b>
Applicant <b>SENSOR HIGHWAY LIMITED</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 6 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
- contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  **Certain claims were found unsearchable (See Box I).**

3.  **Unity of invention is lacking (see Box II).**

4. With regard to the **title**,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

1

None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/03785

A. CLASSIFICATION OF SUBJECT MATTER  
 IPC 7 E21B47/12 E21B47/09 E21B47/10

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E21B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/057805 A (TUBEL PAULO S) 25 July 2002 (2002-07-25) paragraph '0050! – paragraph '0056!; figures 1,4	1,90
X	WO 02/23169 A (OPTOPLAN AS ; KNUDSEN SVERRE (NO); KRINGLEBOTN JON THOMAS (NO); ROE) 21 March 2002 (2002-03-21) the whole document	1,90
X	GB 2 364 380 A (BAKER HUGHES INC) 23 January 2002 (2002-01-23) the whole document	1,90
P, X	US 2003/127232 A1 (CARMODY MICHAEL A ET AL) 10 July 2003 (2003-07-10) the whole document	1,90
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 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

- \*&\* document member of the same patent family

Date of the actual completion of the international search

4 May 2004

Date of mailing of the international search report

11.05.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Weiland, T

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/03785

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 08 165879 A (CENTRAL RES INST OF ELECTRIC POWER IND; SAKATA DENKI KK) 25 June 1996 (1996-06-25) figures ---	64-67, 71, 117-119
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 02, 31 March 1995 (1995-03-31) & JP 06 308532 A (SANYO ELECTRIC CO LTD), 4 November 1994 (1994-11-04) abstract ---	64-67, 71, 117-119
Y	US 4 345 480 A (BASHAM EDWARD R ET AL) 24 August 1982 (1982-08-24) column 4, line 62 -column 6, line 13; figures ---	68-70, 72
Y	US 5 388 466 A (TEUNISSEN THEODORA A) 14 February 1995 (1995-02-14) abstract; figures ---	68-70
X	SU 1 456 548 A (IZHEVSK MEKH INST) 7 February 1989 (1989-02-07) figures ---	64, 117
A	DE 197 23 189 A (STEINERT GUENTHER) 11 December 1997 (1997-12-11) abstract; figures ---	64, 117
A	US 4 566 317 A (SHAKRA FARID J) 28 January 1986 (1986-01-28) column 7, line 44 -column 8, line 8; figure 7 ---	68, 69
Y	US 6 431 270 B1 (ANGLE COLIN M) 13 August 2002 (2002-08-13) column 7, line 50 -column 8, line 19; figures ---	77, 122
Y	US 4 808 925 A (BAIRD GARY K) 28 February 1989 (1989-02-28) abstract; figures ---	77, 122
A	US 5 898 517 A (WEIS R STEPHEN) 27 April 1999 (1999-04-27) abstract; figures ---	77, 122
P, X	US 2003/010495 A1 (MENDEZ LUIS ET AL) 16 January 2003 (2003-01-16) page 3, paragraph 31; figures page 4, paragraph 35 ---	77, 122
A	GB 2 275 953 A (HALLIBURTON CO) 14 September 1994 (1994-09-14) abstract; figures ---	77, 122

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/GB 03/03785

### Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.: 2-63, 91-116 because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
  
3.  Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
  
2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
  
3.  As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:  
1, 90, 64-76, 117-121, 77-89, 122-128
  
4.  No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

#### Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-63, 90-116

A system and method for logging with a fiber optic line connected to a fiber optic sensor.

2. Claims: 64-76, 117-121

flow sensor and method

3. Claims: 77-89, 122-128

A casing collar locator and method.

4. Claims: 129-133

Combination of a conduit and a fiber optic line and method

5. Claims: 134-138

A combination of a fiber optic line and a device or a tool

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box I.2

Claims Nos.: 2-63, 91-116

The initial phase of the search revealed a very large number of documents relevant to the issue of novelty. So many documents were retrieved that it is impossible to determine which parts of the claims may be said to define subject-matter for which protection might legitimately be sought (Article 6 PCT). For these reasons, a meaningful search over the whole breadth of the claim(s) is impossible. Consequently, the search has been restricted to claim 1 and claim 90.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB 03/03785

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 02057805	A 25-07-2002	CA 2412041 A1 GB 2383633 A WO 02057805 A2		25-07-2002 02-07-2003 25-07-2002
WO 0223169	A 21-03-2002	NO 20004554 A AU 8270501 A CA 2422037 A1 EP 1332356 A1 WO 0223169 A1 US 2004033017 A1		13-03-2002 26-03-2002 21-03-2002 06-08-2003 21-03-2002 19-02-2004
GB 2364380	A 23-01-2002	GB 2364381 A ,B GB 2364382 A GB 2364383 A GB 2364384 A AU 730715 B2 AU 4902297 A AU 753252 B2 AU 7273798 A AU 7275398 A CA 2264632 A1 CA 2268104 A1 CA 2288784 A1 CA 2409277 A1 DE 69816743 D1 EP 1357401 A2 EP 1357403 A2 EP 1357402 A2 EP 1355170 A2 EP 1355166 A2 EP 1355167 A2 EP 1355168 A2 EP 1355169 A2 EP 0910725 A1 GB 2354822 A ,B GB 2354583 A ,B GB 2362462 A ,B GB 2362463 A ,B GB 2334104 A ,B GB 2339902 A ,B NO 991350 A NO 991667 A NO 995319 A NO 20023857 A NO 20032268 A US 6268911 B1 US 6281489 B1 WO 9815850 A1 WO 9850681 A1 WO 9850680 A2 US 2003205083 A1 US 2004043501 A1 US 6209640 B1 US 6302204 B1 US 6253848 B1 US 2004065439 A1 US 2001020675 A1 US 2001023614 A1		23-01-2002 23-01-2002 23-01-2002 23-01-2002 15-03-2001 05-05-1998 10-10-2002 27-11-1998 27-11-1998 12-11-1998 16-04-1998 12-11-1998 12-11-1998 04-09-2003 29-10-2003 29-10-2003 29-10-2003 22-10-2003 22-10-2003 22-10-2003 22-10-2003 22-10-2003 22-10-2003 28-04-1999 04-04-2001 28-03-2001 21-11-2001 21-11-2001 11-08-1999 09-02-2000 19-03-1999 27-05-1999 20-12-1999 19-03-1999 19-03-1999 31-07-2001 28-08-2001 16-04-1998 12-11-1998 12-11-1998 06-11-2003 04-03-2004 03-04-2001 16-10-2001 03-07-2001 08-04-2004 13-09-2001 27-09-2001

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB 03/03785

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
GB 2364380	A	US 2002066309 A1 US 6065538 A		06-06-2002 23-05-2000
US 2003127232	A1	10-07-2003	WO 03042498 A1	22-05-2003
JP 08165879	A	25-06-1996	JP 3396867 B2	14-04-2003
JP 06308532	A	04-11-1994	NONE	
US 4345480	A	24-08-1982	NONE	
US 5388466	A	14-02-1995	CA 2082882 A1 AT 127216 T DE 59203460 D1 WO 9221004 A1 EP 0539561 A1 GR 3017269 T3 DK 539561 T3 ES 2076765 T3 JP 3254485 B2 JP 5508231 T	14-05-1994 15-09-1995 05-10-1995 26-11-1992 05-05-1993 30-11-1995 18-09-1995 01-11-1995 04-02-2002 18-11-1993
SU 1456548	A	07-02-1989	SU 1456548 A1	07-02-1989
DE 19723189	A	11-12-1997	DE 19723189 A1	11-12-1997
US 4566317	A	28-01-1986	NONE	
US 6431270	B1	13-08-2002	US 6112809 A AU 738284 B2 AU 4589597 A BR 9706796 A CA 2238334 A1 EP 0862682 A2 NO 982336 A WO 9812418 A2 US 6026911 A US 5947213 A US 6378627 B1	05-09-2000 13-09-2001 14-04-1998 04-01-2000 26-03-1998 09-09-1998 22-07-1998 26-03-1998 22-02-2000 07-09-1999 30-04-2002
US 4808925	A	28-02-1989	NONE	
US 5898517	A	27-04-1999	US 5808779 A US 5675674 A	15-09-1998 07-10-1997
US 2003010495	A1	16-01-2003	CA 2448895 A1 GB 2393201 A WO 02099250 A1	12-12-2002 24-03-2004 12-12-2002
GB 2275953	A	14-09-1994	US 5485745 A GB 2270099 A , B NL 9301512 A NO 933041 A	23-01-1996 02-03-1994 05-04-1994 02-03-1994